

CLAIMS

Having thus described the invention, what is claimed is:

1. A drive roll adapted and configured to feed weld wire, said drive roll comprising:

- (a) opposing first and second sides; and
- (b) a drive roll body extending between the first and second sides, said drive roll body having an outer body surface extending thereabout between the first and second sides, and about a periphery of the outer body surface, the outer body surface comprising a base body surface, and at least one elevated wire interface extending outwardly from, and along, at least a major circumferential portion of the base body surface.

2. A drive roll as in Claim 1, further comprising first and second elevated wire interfaces extending outwardly from, and along, at least a major circumferential portion of the base body surface, and separated from each other.

3. A drive roll as in Claim 1 wherein said at least one elevated wire interface is adjacent, but displaced from, at least one of the first and second sides.

4. A drive roll as in Claim 2 wherein at least one of said elevated interfaces is adjacent, but displaced from, at least one of the first and second sides.

5. A drive roll as in Claim 1, said first and second elevated wire interfaces generally defining a channel therebetween, the channel optionally having a bottom corresponding with said base body surface.

6. A drive roll as in Claim 1 wherein said at least one elevated wire interface comprises first and second elevated circumferential peaks, spaced laterally from each other, and a groove therebetween and wherein a cross-section configuration of the groove corresponds in magnitude to a diameter of such weld wire for which said drive roll is designed and configured.

7. A drive roll as in Claim 2 wherein at least one said elevated wire interface comprises first and second elevated circumferential peaks, spaced laterally from each other, and a groove therebetween, and wherein a cross-section configuration of the groove corresponds to a diameter of such weld wire for which said drive roll is designed and configured.

8. A drive roll as in Claim 1, said elevated wire interface defining a wire interface diameter, the base body surface defining a body diameter, magnitude of the wire interface diameter being greater than magnitude of the body diameter.

9. A drive roll as in Claim 1, further comprising at least one rim extending outwardly from the base body surface.

10. A drive roll as in Claim 9 wherein said at least one rim defines a rim diameter having a magnitude greater than each of the magnitudes of body diameter and wire interface diameter.

11. A drive roll as in Claim 1, said at least one elevated wire interface comprising a circumferential groove extending inwardly from an outer-most portion of said elevated wire interface, to a lower-most portion of said elevated wire interface, the lower-most portion of said elevated wire interface being displaced outwardly, in said drive roll, from the base body surface.

12. A drive roll as in Claim 1, said at least one elevated wire interface comprising first and second elevated circumferential peaks, spaced laterally from each other, and a circumferential groove therebetween, and wherein the circumferential groove defines an arcuate cross-section.

13. A drive roll as in Claim 11 wherein the circumferential groove defines a generally angular cross-section.

14. A drive roll as in Claim 9 wherein an outermost surface of said rim, from an axis of rotation of said drive roll, defines a generally planar or arcuate profile.

15. A wire feeder assembly adapted and configured to feed weld wire, said wire feeder assembly comprising a drive roll as in Claim 1.

16. A welding system comprising a wire feeder assembly as in Claim 15.

17. A method of advancing a weld wire along a generally predetermined path of travel, the method comprising using a wire feeder assembly as in Claim 15 to so advance the weld wire.

18. A drive roll adapted and configured to feed weld wire, said drive roll comprising:

- (a) opposing first and second sides; and
- (b) a drive roll body extending between the first and second sides, said drive roll body having an outer body surface extending thereabout between the first and second sides, the outer body surface comprising a base body surface, and at least one rim extending outwardly from, and along, at least a major circumferential portion of the base body surface, said rim having an outermost surface displaced a maximum distance of said rim, away from an axis of rotation of said drive roll.

19. A drive roll as in Claim 18, further comprising at least one elevated wire interface extending outwardly from, and along, at least a major circumferential portion of the base body surface.

20. A drive roll as in Claim 19, said at least one rim and said at least one elevated wire interface being laterally separated from each other by a distance therebetween which includes at least a portion of the base body surface.

21. A drive roll as in Claim 19 wherein said at least one elevated wire interface extends outwardly from the base body surface a first distance (D3) at a given locus on the periphery of the outer body surface and wherein said at least one rim extends outwardly from the first base body surface a second distance (D4) at the given locus on the periphery of the outer body surface, the magnitude of distance (D3) being less than the magnitude of distance (D4).

22. A drive roll as in Claim 18 wherein said at least one elevated wire interface is spaced from both of the first and second sides.

23. A drive roll as in Claim 21 wherein said at least one of rim is at or proximate at least one of the first and second sides.

24. A drive roll as in Claim 19 wherein said at least one elevated wire interface has a circumferential groove extending inwardly from an outer-most portion of the outer body surface at respective first and second peaks of said elevated wire interface.

25. A drive roll as in Claim 18 wherein the outermost surface of said rim defines a generally planar or arcuate profile.

26. A drive roll as in Claim 21 wherein the outermost surface of said rim defines a generally planar or arcuate profile.

27. A drive roll as in Claim 23 wherein the outermost surface of said rim defines a generally planar or arcuate profile.

28. A wire feeder assembly adapted and configured to feed weld wire, said wire feeder assembly comprising a drive roll as in Claim 18.

29. A welding system comprising a wire feeder assembly as in Claim 28.

30. A method of advancing a weld wire along a generally predetermined path of travel, the method comprising using a wire feeder assembly as in Claim 28 to so advance the weld wire.

31. A drive roll adapted and configured to feed weld wire having a predetermined diameter, said drive roll having an axis of rotation, and comprising:

- (a) opposing first and second sides,
- (b) a drive roll body extending between the first and second sides, said drive roll body having a generally circumferential outer surface, the generally circumferential outer surface comprising a first circumferentially-extending portion thereof, having a first radius from the axis of rotation, and further comprising at least first, second, and third circumferentially-extending recesses in the generally circumferential outer surface, extending radially inwardly, toward the axis of rotation, from the first circumferentially-extending portion.

32. A drive roll as in Claim 30 wherein at least one of said first, second, and third recesses extends about the entirety of a periphery of said drive roll.

33. A drive roll as in Claim 30 wherein at least one of said at least first, second, and third recesses defines a cavity disposed inwardly from the first portion of the generally circumferential outer surface, the cavity being compatible with such weld wire having such predetermined diameter, such that the respective recess comprises a groove.

34. A drive roll as in Claim 30 wherein a first elevated wire interface is disposed between the first and second recesses, such that the first and second recesses comprise channels.

35. A wire feeder assembly adapted and configured to feed weld wire, said wire feeder assembly comprising a drive roll as in Claim 30.

36. A welding system comprising a wire feeder assembly as in Claim 30.

37. A method of advancing a weld wire along a generally predetermined path of travel, the method comprising using a wire feeder assembly as in Claim 35 to so advance the weld wire.